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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/023,638	12/17/2001	Sang-Soon Kim	678-723 (P9785)	4273

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EXAMINER

DANIEL JR, WILLIE J

ART UNIT	PAPER NUMBER
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2686

DATE MAILED: 06/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/023,638

Applicant(s)

KIM ET AL.

Examiner

Willie J. Daniel, Jr.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 March 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 29 December 2003 is in compliance with the provisions of 37 CFR 1.97 and is being considered by the examiner.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3, 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Lim (US 6,628,974 B1)** in view of **Iwata et al. (hereinafter Iwata) (US 5,723,959)**.

Regarding **Claim 1**, Lim discloses an apparatus for controlling opening and closing of a folder in a foldable mobile communication terminal (see Fig. 5 “ref. 1”) having a main body (3) and a sub-body (2) foldably mounted on the main body (3), said sub-body (2) being opened or closed either automatically or manually in compliance with a user's selection, said apparatus comprising (see abstract; col. 5, lines 14-25; col. 7, lines 61-64; col. 8, lines 55-57; col. 9, lines 29-31; col. 11, lines 57-61; Fig. 5):

a sensor means (50, 51, 52) arranged at one end of the main-body (3) and the sub-body (2), for detecting a fully open status or a fully closed status of the sub-body (2) on the main-body (3) (see col. 6, line 56 - col. 7, line 9), where the position detection section controls the driving section for opening and closing;

a rotating section (10) which reads on the claimed “sub-body opening and closing drive unit” for automatically opening or closing the sub-body (2) by means of activating a sub-body drive motor (12) rotatably coupled with said one end of the sub-body (2), under control of a switch (5) which hereinafter reads on the “control unit” (see col. 5, lines 5-24), where a control unit would be inherent to respond to the switch (5) operating the power transferring

section and driving section. Lim fails to disclose having a current sensing unit coupled to the control unit for sensing an amount of motor drive current applied to the sub-body drive motor and providing the sensed amount of motor drive current to the control unit; and said control unit for taking a measurement of the amount of the motor drive current output from said current sensing unit upon enabling of an automatic opening or closing operation of the sub-body in the sub-body opening and closing drive unit in compliance with the user's selection of automatic sub-body control, and for discontinuing to drive the sub-body drive motor when the measured amount of the motor drive current is larger than a predetermined current threshold value and the sensor means senses either one of a fully open status or a fully closed status of the sub-body. However, the examiner maintains that having a current sensing unit coupled to the control unit for sensing an amount of motor drive current applied to the sub-body drive motor and providing the sensed amount of motor drive current to the control unit; and said control unit for taking a measurement of the amount of the motor drive current output from said current sensing unit upon enabling of an automatic opening or closing operation of the sub-body in the sub-body opening and closing drive unit in compliance with the user's selection of automatic sub-body control, and for discontinuing to drive the sub-body drive motor when the measured amount of the motor drive current is larger than a predetermined current threshold value and the sensor means senses either one of a fully open status or a fully closed status of the sub-body was well known in the art, as taught by Itawa.

In the same field of endeavor, Iwata teaches of
a motor lock detection circuit (88) which reads on the claimed "current sensing unit"
coupled to the control device (10) which reads on the claimed "unit" for sensing an amount

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of motor drive current applied to the window glass which reads on the claimed "sub-body" drive motor (12) and providing the sensed amount of motor drive current to the control unit (10) (see col. 4, lines 1-6; col. 5, lines 5 col. 6, lines 21; col. 7, lines 52-56; Fig. 1), where the motor lock detection circuit monitors the current of the motor during the raising and lowering of the window; and

said control unit (10) for taking a measurement of the amount of the motor drive current output from said current sensing unit (88) upon enabling of an automatic opening or closing operation of the sub-body in the sub-body opening and closing drive unit in compliance with the user's selection of automatic sub-body control, and for discontinuing to drive the sub-body drive motor (12) when the measured amount of the motor drive current is larger than a predetermined current threshold value and the sensor (96) means senses either one of a fully open status or a fully closed status of the sub-body (see col. 4, lines 1-6; col. 5, lines 32-55; col. 5, line 65 - col. 6, lines 46; col. 7, lines 52-56; Fig. 1), where the motor lock detection circuit monitors the current according to the comparator using the predetermined current to detect the complete raising/lowering of the window in which the drive unit would be inherent.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Lim and Iwata to have a current sensing unit coupled to the control unit for sensing an amount of motor drive current applied to the sub-body drive motor and providing the sensed amount of motor drive current to the control unit; and said control unit for taking a measurement of the amount of the motor drive current output from said current sensing unit upon enabling of an automatic opening or closing

operation of the sub-body in the sub-body opening and closing drive unit in compliance with the user's selection of automatic sub-body control, and for discontinuing to drive the sub-body drive motor when the measured amount of the motor drive current is larger than a predetermined current threshold value and the sensor means senses either one of a fully open status or a fully closed status of the sub-body, in order to have the current monitored during the raising or lowering of the window glass, so the fully opened or closed state is detected as taught by Iwata.

Regarding **Claim 3**, Lim teaches of a method for controlling automatic opening and closing of a folder in a foldable mobile communication terminal (1) having a main body (3), a sub-body (2) foldably mounted on the main body (3), a sensor (50, 51, 52) means for detecting a fully open status or a fully closed status of the sub-body with respect to the main-body (3), and a sub-body (2) opening and closing drive unit for automatically opening or closing the sub-body by activating a sub-body drive motor (14), under control of a control unit (5) (see abstract; col. 5, lines 14-25; col. 6, line 56 - col. 7, line 9; col. 7, lines 61-64; col. 11, lines 57-61; Fig. 5), the method comprising the step of using a switch (5) to control the activation of automatically opening or closing sub-body (2) (see col. 5, lines 5-24; col. 8, lines 55-57; col. 9, lines 29-31) and discontinuing to drive sub-body (2) when the sensor means detects either a fully open status or fully closed status of the sub-body (2) (see col. 8, line 55 - col. 9, line 62). Lim fails to disclose taking a measurement of an amount of motor driving current applied to the sub-body drive motor when there is an activation of the sub-body opening and closing drive unit to drive the sub-body drive motor for opening or closing the sub-body in compliance with a user's selection to automatic opening or closing by a

switch; and discontinuing to drive the sub-body drive motor when the measured amount of motor driving current is greater than a predetermined current threshold value and the sensor means detects either a fully open status or a fully closed status of the sub-body. However, the examiner maintains that taking a measurement of an amount of motor driving current applied to the sub-body drive motor when there is an activation of the sub-body opening and closing drive unit to drive the sub-body drive motor for opening or closing the sub-body in compliance with a user's selection to automatic opening or closing by a switch; and discontinuing to drive the sub-body drive motor when the measured amount of motor driving current is greater than a predetermined current threshold value and the sensor means detects either a fully open status or a fully closed status of the sub-body was well known in the art, as taught by Iwata.

Iwata further teaches of

taking a measurement of an amount of motor driving current applied to the sub-body drive motor (12) when there is an activation of the sub-body opening and closing drive unit to drive the sub-body drive motor (12) for opening or closing the sub-body in compliance with a user's selection to automatic opening or closing by a switch (48) (see col. 4, lines 31-39; col. 5, lines 32-37; col. 5, line 65 - col. 6, line 30; col. 7, lines 52-56; Fig. 1), where the motor lock detection circuits monitors the amount of current flowing through the motor ; and

discontinuing to drive the sub-body drive motor (12) when the measured amount of motor driving current is greater than a predetermined current threshold value (I1) and the sensor means (96) detects either a fully open status or a fully closed status of the sub-body (see col. 4, lines 31-39; col. 5, lines 32-37; col. 5, line 65 - col. 6, line 48; col. 7, lines 52-62;

Fig. 1), where the motor exceeds a predetermined current value during the complete raising/lowering (opening/closing) in which the motor will stop operation.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Lim and Iwata for taking a measurement of an amount of motor driving current applied to the sub-body drive motor when there is an activation of the sub-body opening and closing drive unit to drive the sub-body drive motor for opening or closing the sub-body in compliance with a user's selection to automatic opening or closing by a switch; and discontinuing to drive the sub-body drive motor when the measured amount of motor driving current is greater than a predetermined current threshold value and the sensor means detects either a fully open status or a fully closed status of the sub-body, in order to have the current monitored during the raising or lowering of the window glass, so the fully opened or closed state is detected as taught by Iwata.

Regarding **Claim 4**, Lim teaches of having a motor (12) (see col. 5, lines 14-30; col. 10, lines 33-40), where the motor operates according to an electrical signal. Lim fails to disclose measuring current over a period. However, the examiner maintains that measuring current over a period was well known in the art, as taught by Iwata.

Iwata further teaches of wherein the measurement of the amount of motor driving current is carried out in a period of several tens of milliseconds (see col. 5, line 44 - col. 6, line 34; Figs. 1, 2A-F, and 3A-D), where the control device (10) has timer circuits for evaluating time periods of operation as the motor is in the state of raising or lowering. The current is monitored in correlation to the time periods (see col. 7, lines 51-62).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Lim and Iwata for measuring current over a period, in order to have the current monitored during the raising or lowering of the window glass, so the fully opened or closed state is detected as taught by Iwata.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Lim (US 6,628,974 B1)** and **Iwata et al. (hereinafter Iwata) (US 5,723,959)** as applied to claim 1 above, and further in view of **Toba (US 6,438,392 B1)**.

Regarding **Claim 2**, the combination of Lim and Iwata discloses everything claimed, as applied above (see claim 1), in addition Lim further teaches of having mobile communication terminal (1) having

a first magnet disposed in a hinge shaft (60) which reads on the claimed “hinge” rotatably connected to one end of the sub-body (2) and the main-body (3), said hinge (60) being provided with the sub-body opening and closing drive unit (10) (see col. 5, lines 4-19; col. 6, lines 56-65; col. 7, lines 4-9; col. 10, lines 26-56; col. 11, lines 29-54; Figs. 5, 6, 7, 12, 20-21, 32), where the magnet is the magnetic field generated for the magnetic sensors to detect for determining the position of the folding component in which the first magnet would be inherent;

an opening sensor (51, 52) disposed, in the vicinity of the hinge, on one end of a lower surface of a printed circuit board inside the main-body (3), for providing the control unit with a first sensing signal indicating a fully open status of the sub-body from the main-body (3), when the first magnet is placed in close proximity to the opening sensor (see col. 5, lines 4-

19; col. 6, line 60 - col. 7, line 57; col. 11, lines 29-54; Figs. 5, 6, 7, 12, 20-21, 32), where the position detection section provides a controlling signal for the driving section to detect the position of the rotating sections. The sensors provide a specific control signal to the driving section to detect the position between the sub-body and main-body for opening/closing and to keep the rotating sections in phase, in which the sensors being in vicinity of the printed circuit board would be inherent. Also, contact switches can be used for determining the position of the foldable section. The combination of Lim and Iwata fails to disclose having a second magnet mounted inwardly on an inner surface of the sub-body, spaced apart from the hinge; a closing sensor disposed in a position opposing to the second magnet, spaced apart from the hinge, on the printed circuit board inside the main-body, for providing the control unit with a second sensing signal indicating a fully closed status of the sub-body onto the main-body, when the second magnet is placed in close proximity to the closing sensor. However, the examiner maintains that having a second magnet mounted inwardly on an inner surface of the sub-body, spaced apart from the hinge; a closing sensor disposed in a position opposing to the second magnet, spaced apart from the hinge, on the printed circuit board inside the main-body, for providing the control unit with a second sensing signal indicating a fully closed status of the sub-body onto the main-body, when the second magnet is placed in close proximity to the closing sensor was well known in the art, as taught by Toba.

In the same field of endeavor, Toba teaches of

a magnet (7) which reads on the claimed "second magnet" mounted inwardly on an inner surface of the cover section which reads on the claimed "sub-body", spaced apart from the

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hinge (3) (see col. 4, lines 31-52; Fig. 1), where the magnet and detection circuit is able to detect the open or close position;

an open/close detection circuit (5) which reads on the claimed "closing sensor" disposed in a position opposing to the second magnet (7), spaced apart from the hinge (3), on the printed circuit board inside the body (1) which reads on the claimed "main-body", for providing the control circuit (12) which reads on the claimed "control unit" with a second sensing signal indicating a fully closed status of the sub-body (2) onto the main-body (1), when the second magnet (7) is placed in close proximity to the closing sensor (5) (see col. 4, lines 31-53; Figs. 1-4), where the magnet and detection circuit determines whether the folding portion is opened or closed in which the cover section can be realized by a hall element for the positioning. Also, the printed circuit board would be inherent for connecting the components (see Fig. 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Lim, Iwata, and Toba to have a second magnet mounted inwardly on an inner surface of the sub-body, spaced apart from the hinge; a closing sensor disposed in a position opposing to the second magnet, spaced apart from the hinge, on the printed circuit board inside the main-body, for providing the control unit with a second sensing signal indicating a fully closed status of the sub-body onto the main-body, when the second magnet is placed in close proximity to the closing sensor, in order to have a cellular telephone that is able to detect the open/close position of the foldable portion, as taught by Toba.

Response to Arguments

3. Applicant's arguments, see pg. 2, 3rd paragraph, filed 17 March 2004, with respect to the rejection(s) of claim(s) 1-4 under 35 U.S.C 103 (c) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of **Itawa et al. (US 5,723,959)** and **Toba (US 6,438,392 B1)**.

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Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


a. **Nishibe et al. (US 5,453,669)** discloses a "Motor Current Detection Circuit".

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Willie J. Daniel, Jr. whose telephone number is (703) 305-8636. The examiner can normally be reached on 7:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha D. Banks-Harold can be reached on (703) 305-4379. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

WJD,JR/wjd,jr
19 May 2004


CHARLES APPIAH
PRIMARY EXAMINER